Statement of
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Chairman LaTourette and other members of the Subcommittee, it is my pleasure to present my thoughts concerning the extent and causes of and potential remedies for the "U.S. Railroad Capacity Crunch".

I have been active in rail systems research and consulting for 35 years, starting with my graduate research in 1971-72 on "Origin-to-Destination Unreliability in Rail Freight Transportation" and continuing through recent participation in rail system performance studies, including AASHTO's Rail Bottom Line Report. I have supervised numerous research projects concerning rail freight service, capacity, productivity, and safety. During the 1970s, most of my rail research was funded by the U.S. Department of Transportation. Since 1980, most of my rail research has been funded by individual railroads or the Association of American Railroads, except for several projects concerning train control and safety that were funded by the Federal Railroad Administration. My research and consulting has involved the development and application of various models of rail capacity and performance, and I have authored or co-authored more than 100 professional papers and reports on rail systems performance.

I would like to make several main points today:

- Rail freight transportation is an important component of the national transportation system. Rising energy costs, increased economic growth, and rising highway congestion will make rail even more important in the future.
- The capacity crunch is real, it results in degradation of rail service, and it threatens to limit the role of rail transportation.
- Poor service and capacity limits are important and legitimate concerns for the public, government agencies, and Congress.
- Potential benefits from expanded rail capacity include relief for highway congestion, improvement in environmental quality, enhanced ability to move military cargo, and a more robust national transportation system, along with the general economic benefits of having an efficient rail system.
- The rail industry is investing heavily in capacity, but individual railroads will concentrate their limited funds on what they perceive to be their most profitable market segments.

- Federal, state and local agencies are also investing in rail capacity, but their resources are limited under current programs. Additional funding mechanisms are needed to ensure sufficient capacity becomes available as needed.
- Public funding for rail freight systems research and planning have been severely curtailed over the last 25 years. Allocating a small portion of rail infrastructure investment for research and planning will enable federal, state and local agencies to work more effectively with the railroads in identifying the best strategies for increasing rail capacity.

My basic thesis is that today's rail system, while currently profitable and expanding, has suffered from decades of downsizing, declining rates, and competition from highly subsidized modes. With rising energy costs, increasing highway congestion, greater demand for inter-city passenger and commuter services, there is an opportunity and a need for moving toward a modern, high quality, high capacity rail system. However, we do not well understand what such a system should look like, nor do we understand how best to expand and transform the system. To move forward, we need not only financial resources, but also the human and intellectual resources for identifying, evaluating, and choosing among the options available for increasing the capacity and improving the performance of the nation's rail system.

Our goal should be to create what I call an "Interstate Rail System" with characteristics analogous to the Interstate Highway System. The system would have:

- High capacity, multi-track mainlines capable of handling more freight and passenger traffic with less delay and fewer accidents.
- Efficient, high capacity intermodal terminals situated in and around all major metropolitan areas to facilitate intercity and international transport of containerizable goods while helping to minimize truck-miles within urban areas.
- Efficient, high-capacity heavy haul systems for coal, grain, and other bulk commodities, with most of the network able to handle cars with gross weights up to the industry standard (currently286,000 pounds).
- Modern, efficient systems for handling general merchandise traffic, including well-maintained light-density lines as well as modern classification and local support yards.

An Interstate Rail System would provide several strategic advantages over the current system.

- Average freight train speeds would be doubled, from the current 20-25mph to 40-50 mph.
- The system would be able to handle substantial additional volumes of coal and grain without compromising the ability to handle general merchandise traffic.
- Reliable 6-8 day freight service would be available for essentially all carload freight moving within the lower 48 states and Canada.
- More industrial development opportunities would be available on lines that are well-maintained, safe, and served on a more frequent basis, whether by Class I or by short line railroads.

- More capacity would be available to support the expected increase in demand for commuter and intercity passenger trains, as well as any unexpected surges in demand related to natural disasters or national security.

Now I will provide some discussion of the key elements of my thesis.

The Capacity Crunch is Real

The capacity crunch is real, it could go on for a long time, and it has serious consequences. Over the past 10 years, there have been many occasions where mergers, bad weather, or spikes in demand have triggered prolonged periods of congestion. All of the major US railroads have suffered from such episodes, and customers have frequently complained about long and unreliable transit times and equipment shortages. Accounts of these shortages have appeared regularly in the national press since 1996.

<u>Poor Service</u>

The main symptom of the capacity crunch is that transit times and reliability have deteriorated, particularly for general merchandise freight. I have conducted numerous studies of freight service reliability over the past 35 years. In studies completed in 1975 and in 1992, I characterized typical rail service as having average origin-to-destination transit time of about 7 days with variability of a day or two. In the last 10 years, I have seen many instances where average origin-to-destination trip times are 10-15 days with very high variability. I have seen recent performance data where the average trip time was in excess of 10 days for all shipments destined to various short lines. In other words, trip times appear to have increased by 25-50% or more for general merchandise traffic during the past 10 years.

Terminal time is the key input to trip time for general merchandise traffic. Service quality is related less to distance than to the number of yards where a car has to be switched from one train to another (just as the time and reliability of a journey by air depends greatly upon the number of airports you must pass through). In fact, general merchandise cars spend most of their time in yards, since it usually takes in excess of 12 hours for a car to make a connection from one train to another. In the 1970s, 1980s, and early 1990s, I found that benchmarks for terminal performance in North America were 16-20 hours for train connections. Since 1996, when the railroads began reporting average terminal time to the Surface Transportation Board on a regular basis, it has been far more common to see terminal times in excess of 30 hours than below 20.

Terminal times are less important for bulk and intermodal traffic, which typically are handled at only the origin and the destination and perhaps at an intermediate yard. Line speed, another statistic reported to the STB, is the key for this traffic. The average train speed is less than 25 mph, because trains experience lengthy delays related to meets and passes and to track maintenance, especially on single track lines. On well-maintained track, most freight trains could operate at 40 mph or faster without these delays.

Rising Rates

A second symptom of the capacity problem is that rates are rising for the first time since the early 1980s. Rates were up on the order of 10% in 2005, which is a major change from the prior 20 years. Immediately following deregulation, average rail freight rates rose, as railroads were no longer constrained to offer service at a loss at rates approved by the ICC. However, the dominant effect of deregulation was to enhance rail-rail and rail-truck competition, putting pressure on rates. Average revenue per ton-mile declined every year from 1983 through 2001, after rising or remaining essentially unchanged every year from 1966 to 1982[1]. In constant dollar terms, average revenue per ton-mile began to rise only in 2004. The reversal of a 20-year trend suggests a very significant change. In my opinion, the driving factors supporting higher rail rates are the shortage of capacity in the rail system coupled with rising rates for trucking during a time when demand is growing, most notably for coal and for containerized imports. Since service quality has declined, the higher rates certainly do not reflect faster or more reliable trip times! For the first time in a generation, the railroads are able to raise rates, so they do.

Increasing Length of Haul

A third symptom of the capacity problem is the increasing length of haul along with public statements by carrier officials that they are considering cutting back on general merchandise service. The average length of haul, which was 515 miles in 1970, 615 miles in 1980, and 725 miles in 2000, reached 901 miles in 2005. Railroads prefer longer hauls because they are more profitable and because rail clearly has a competitive advantage over trucks for longer hauls. However, the bulk of the freight flows in the country are well under 500 miles, and there are numerous examples of railroads handling shorter haul freight on a profitable basis. Public transportation agencies would like the railroads to handle more freight, not less, and they would like railroads to reduce their average length of haul by increasing their share of the shorter haul markets.

State and Local Interest in Rail

A fourth symptom of the capacity problem is the interest expressed by public agencies in expanding the role of rail. In the past five years I have been asked – because of my knowledge of rail freight – to participate in the following studies, all of which were motivated to some extent by a recognition that the rail system may be able to handle the traffic volume that is expected if the railroads simply maintain their share of the market:

- Freight Analysis Framework, Federal Highway Administration, 2000
- "Benefits of the Rail System to the City of Chicago" (sponsored by the City of Chicago), 2003
- "Sustainable Mobility", sponsored by the World Business Council, 2004 (a cooperative effort funded by oil companies and automobile manufacturers)
- AASHTO "Freight Rail Bottom Line Report", 2004

[1] Source: AAR, "RR Facts", various years

- "Rail Freight Solutions to Roadway Congestion", National Cooperative Highway Research Program, NCHRP 8-42, 2006

What is interesting about this list is that all of these studies were funded by agencies other than the FRA – because the FRA lacks the authority, staff or funds to conduct such studies. During this period I have participated in various policy discussions with FRA officials, including a meeting of rail experts with the administrator of the FRA and the head of the Surface Transportation Board, a workshop conducted by TRB for the GAO concerning the effects of deregulation on the rail industry, and a recent workshop conducted by TRB for the FRA concerning FRA's research priorities. These were all very interesting – but it was rather remarkable to me that the FRA does not have the in-house capability of addressing these issues at anything close to the depth that they deserve. It is ironic that the agency that might be expected to have the most interest in and knowledge concerning rail capacity has for so long had no authority or resources to study the problem. (At the recent workshop on rail research conducted by the Transportation Research Board on behalf of FRA, I and the other participants strongly emphasized the need for a research program that goes far beyond safety.)

Causes of the Capacity Problem

The most commonly heard explanation of the capacity problem is that the railroads were forced to downsize or to limit their investments because they were not earning their cost of capital and therefore could not attract private investment. This notion has some merit, but it is not the whole story. I would like to add some additional considerations:

1. Much of the rail industry was constructed in the 19th century, long before cars, trucks and planes offered effective competition for intercity traffic. The density of rail routes reflected the dominance of the railways for both passengers and freight. The system was laid out to serve the economic geography of that century – not to serve the population centers, the ports, the manufacturing and distribution centers, or the agricultural systems of the 21st century. Capacity problems in part reflect the fact that the system was not designed to do what we now would like it to do. And now the urban areas have grown up around, impinged upon, and otherwise restricted the options for operating or expanding the rail network.

2. The rail industry went through generations of down-sizing from the 1920s to the 1990s. Many senior rail managers learned railroading in an era when anticipating growth was seldom a priority. In times of declining traffic, it is not only possible, but desirable to operate "close to the edge", i.e. close to a capacity limit, as the problems will tend to diminish next year. Rail managers now need to re-learn how best to invest in anticipation of growth.

3. For many years, the effects of traffic growth were mitigated by productivity improvements. Even though ton-miles have increased steadily ever since 1982, the extra traffic was for many years easily handled in longer and heavier trains. Bulk traffic was shifted to heavier cars in unit trains, and a great deal of

merchandise traffic was shifted from boxcars to intermodal containers and trailers. It wasn't until 1996 that train-miles reached the levels of 1973 and 1974. – and that was when serious congestion problems began to emerge. Rising demand finally caught up with declining supply.

4. Deregulation, by enhancing intra- and inter-modal competition, further emphasized cost-cutting and network rationalization. Efforts aimed at improving trip times and reliability suffered in comparison with efforts aimed at reducing costs. Service benefits were viewed by rail managers as "soft" if not fictitious.

5. At the time of deregulation, the industry suffered from a glut of general merchandise equipment. With large numbers of cars stored serviceable, the marginal benefit from improved utilization and the marginal cost of poorer utilization were both close to zero. Equipment utilization, so great a concern in the 1970s, ceased to be a problem. Only recently have equipment shortages again made it necessary to consider the marginal costs of freight cars and the potential costs of rail congestion.

6. At the time of deregulation, the FRA was required to focus its research budget on safety. During the 1970s, the FRA, DOT, and the United States Railway Administration had supported many interdisciplinary research programs that went far beyond safety: the USRA studies that led to the creation of Conrail, the Freight Equipment Utilization Research/Demonstration Program, Labor/Management Task Forces, and the creation of the Transportation Test Center in Pueblo, which was useful not only for safety analysis but also for studying heavy axle loads. Many tools developed in these research programs are still used today. The rail officials who participated in these studies – and the students who did graduate research as part of these programs - fill important positions in the industry today. However, there is not a cadre of younger rail managers or consultants who have benefited from similar experiences.

7. Lower rates help attract more demand, which eventually exacerbates the capacity problems, especially if the rates do not reflect the costs of congestion.

8. Technology has in general been quite beneficial to the railroads, but capacity is only partially a problem of technology. Better track components, lighter materials for freight cars, more efficient locomotives, and better communications and control have allowed substantial reductions in rail costs, especially the costs for unit trains and intermodal trains. In 1970, there were very few lines that handled more than 20 million gross tons per year (MGT); today, there are many lines that handle in excess of 100 MGT. Higher traffic densities plus the increase in the load limit from 263,000 to 286,000 pounds provided a "free" boost in capacity on well-maintained lines. The capacity boost was free in the sense that the savings in equipment and crews offset the increases in track costs, at least on mainline tracks. However, technology has not had much of an impact on capacity, service, or equipment utilization for general merchandise freight. These are more difficult

system problems related to operations planning, management and control, and terminal operations.

Is The Capacity Crunch a Problem?

Capacity limits and service problems are certainly concerns for freight customers, but are they a concern for the public? Perhaps these problems will be handled adequately by market forces: prices will rise, increasing profits, attracting capital, and encouraging investment. If so, then perhaps no significant public response is needed.

However, we have now experienced a 10-year period beset by multiple periods of extreme congestion and poor service. Despite very impressive investments, the rail industry has barely managed to keep up with demand. It is possible that the rail industry will be able to maintain current rate levels only so long as a capacity shortage is maintained. If capacity were adequate, then the 20-plus years of post-Staggers experience suggest that rates would continue to decline. Hence, we could have a spurt of investment that would provide some capacity relief, followed by declining rates and lower investment, ultimately ending up with more grid-lock precipitated perhaps by extreme weather, a spike in demand, a merger or some other proximate cause.

It seems to be clear that there is a public interest in ensuring that there is sufficient rail capacity to handle more traffic, safely, with a better quality of service. From reading their rail plans, it is clear that many states would like to see more freight (and more passengers) handled by the railroads. A large number of short line railroads have received some sort of public assistance, whether in the form of tax relief, public ownership of the right-of-way, public assistance in rehabilitation or other measures. The short line industry has sought and received assistance from Congress for upgrading their systems to handle heavier axle loads. Studies and reports prepared for DOT, AASHTO and TRB extol the virtues of rail in terms of energy consumption, safety, logistics costs, and environmental quality. Various metropolitan areas have invested heavily in rail infrastructure. This committee, in its actions regarding the Railroad Rehabilitation and Improvement Financing (RRIF) Program, has promoted a greater public involvement in ensuring sufficient investment in rail capacity. Congress has many times previously provided the institutional and financial mechanisms to increase or maintain rail capacity.

However, it is not clear that the Class I railroads have the means or the incentive to carry out the investments that are likely to be needed. The major railroads have, for decades, improved their performance by focusing on their most profitable markets. Today, that means focusing on high-density bulk movements and long-haul intermodal services, while cutting back on general merchandise traffic. It is not at all clear that the Class I railroads will (or should, given their financial situation) invest so as to handle shorter-haul intermodal traffic or minor bulk movement; it is probably more likely than not that they will resist significant investments in yards and equipment that will be needed to handle substantially more general merchandise traffic.

What will happen if rail investment is insufficient to allow much growth in traffic? One outcome is that more traffic will have to move by truck, which will hinder rather than help efforts to relieve congestion and reduce consumption of fossil fuels. Another possibility is that it will become even more difficult to handle commuter trains, limiting the role of public transportation in some or many metropolitan areas. Another undesirable outcome is that economic growth could be limited, either in particular areas or in large parts of the country.

The capacity crunch is especially hard for short line and regional railroads. I am currently supervising a small research project sponsored by the short line industry. They are obtaining better information concerning trip times and reliability so that they can identify ways to improve the service they provide. They for the most part have plenty of track capacity and many locations for industrial development. Many of them are enjoying substantial growth in traffic, which is often related to economic growth in the region that they serve. For the most part, they handle general merchandise traffic as opposed to intermodal traffic or unit trains. They are often run by experienced railroad officials who have a strong marketing background and a demonstrated ability to innovate and adapt as a way to attract new business. In short, they are doing precisely what is desired by the public and by public agencies. However, they interchange their traffic with the Class I railroads, so they are greatly affected by capacity and service problems.

In summary, the big question is whether or not the industry will invest so as to be able to handle – with good, efficient, safe service – what the public would view as their proper share. Will investments in the rail system reflect just the profitability of the railroads – or will investments also reflect the public benefits in terms of economic development, energy use, safety and congestion? Can public transport agencies and private sector railroads work together to understand and overcome the capacity crunch?

Prior Research Programs

There are strong precedents for public funding for railroads and for public participation in rail research and planning. During the 1970s, a great deal of research was sponsored by the federal government to help the rail industry remain profitable and competitive. Much of the research was related to the Northeast rail crisis, the formation of the United States Railway Association, the creation of Conrail, and deregulation. To some extent the current capacity problems are the reverse of the problems dealt with at that time. Then, the industry suffered because the route structure and the institutional structure were both inadequate for the competitive needs of the industry. The industry needed to be rationalized and revitalized, and it was essential to simplify the corporate structure of the industry and to achieve much productivity gains. The problems were great, but the opportunities were clear, and efforts initiated in the 1970s, including but not limited to deregulation, led to tremendous gains in productivity during the 1980s and 1990s.

Today the problem is too little rather than too much capacity, and the question is not whether the industry can survive but whether it can grow fast enough to play an expanded role in the transportation system. Nevertheless, today's problems – and the potential solutions - do bear some resemblance to those of the 1970s. First of all, much of the problem is financial: fix the finances and the industry can invest and expand. Second, the problem is a systems problem: solutions will involve railroads, their customers, and governments at all levels; technologies related to track, facilities, equipment, and control will all be relevant; labor and management issues will be important. In many ways, investing to add capacity is not necessarily any different than investing to consolidate capacity. Preserving rail service in the northeast required a large investment in Conrail, an investment that was very successful in large part because of the resources and efforts that went into planning and analysis.

As a researcher, I would like to highlight one very successful initiative that brought all the parties together to seek improvements in rail performance, namely the Freight Car Utilization Research/Demonstration Program (FCUP). This program was initiated in 1974 by the Association of American Railroads (AAR), in cooperation with the Federal Railroad Administration in response to public concerns about freight car shortages.[2] I will go into some detail on this program because I believe that it could be a model for a similar long-term approach to improving rail performance and capacity.

An industry task force prepared a plan for the program. The task force was chaired by Dr. W.J. Harris, head of the R&T Department of the AAR, and it included officials of four railroads (with responsibilities in operations, transportation, customer service, and transportation planning), a representative from FRA, and three additional AAR officials (representing the office of the president, R&T, and management systems.) The program formally began on April 1, 1975. The program had a steering committee that was chaired by Dr. Harris of the AAR, three senior mangers from the AAR, 11 senior officials from the Class I railroads, and Howard Croft, the president of the American Short Line Railroad Association. The program was structured as a 3-phase, 8-year program with funding at a level of $1-$2 million per year, about half of which was funded by the FRA. There were 6 task forces in Phase I, each dealing with one of the topics identified in the initial report:

1. Analysis of current practices and problems
2. The development of car utilization measurement standards
3. The development of additional data on car cycles
4. Development of recommendations regarding present and proposed FRA programs on car utilization (such as freight car scheduling)
5. Studies of AAR and ICC car service rules, orders and directives
6. Freight car time reliability studies

The initial ideas for Phase II were as follows:

1. A study of the demand fluctuation for freight cars.
2. The bad-order or unserviceable car problem
3. Customer practices study
4. Car distribution practices

[2] "A Proposed AAR Car Utilization Research Program", Notice to the AAR Board, March 15, 1974

5. The assigned car problem

For Phase III, the initial ideas were as follows:

1. Improved education in regard to car distribution practice
2. Equipment design
3. Work rules
4. Railroad policy questions (including a broader consideration of all factors affecting railroad capacity)
5. Public policy questions (including demand-responsive pricing and other techniques for reducing peak demands that were not allowed by the regulations in effect at that time)

The FCUP was implemented and continued for eight years, with studies for Phases II and III adjusted by the Steering Committee. At the completion of FRA funding, the program was continued internally within the AAR as the "Freight Equipment Management Program". The FCUP produced a large number of reports and resulted in many strategies that were implemented to improve equipment management. Among the most notable features of this program were the following:

- Industry involvement: senior officials from all the major and many of the smaller railroads served on the Steering Committee or the Task Forces.
- Customer involvement: one of the assistant directors of the program was an employee of a major rail customer, and customer officials also participated in some of the task forces and in various case studies.
- Government involvement: the FRA provided significant funding for the program, FRA officials participated in the Steering Committee and the task forces.
- Academic involvement: the program supported research at universities, which enabled students and faculty to work on rail industry problems (many students who worked on FCUP projects went on to successful careers in the rail industry)
- Critical mass: the program was funded at a level that enabled the creation of a permanent staff (generally 2-3 people) at AAR headquarters; it was supported by the industry to an extent that several dozen rail officials had a continuing, active interest in designing and monitoring the research program.
- Long-term funding: the program was planned as a continuing research endeavor, and in fact continued for more than a decade.
- AAR Administration: the program was administered through the AAR, which was responsible for reporting progress to FRA and for coordinating funding and manpower contributions from many different companies.
- Practical applications: the close linkages between the researchers and the task forces ensured that the research was designed, conducted and disseminated in a way that allowed practical applications.
- Breadth: "car utilization" was interpreted very broadly, and the intent from the outset was to consider many different ways to improve performance, including engineering, car management, transportation, operating, marketing, and regulatory

issues along with traditional concerns with empty car distribution and car hire/car service rules.

The FCUP probably would not have been possible without several key characteristics of the period. First, the crisis in car supply threatened to lead to government intervention in car management, which the railroads all wanted to avoid; a research program therefore was at worst a way to defer government intervention. Second, following the collapse of the Penn Central, it was clear to everyone that the rail industry needed major restructuring. It was a good time to be seeking new ways of doing business. Third, funding was available from the FRA, which made it much easier for the rail industry to initiate the activity. Fourth, the industry at that time had 52 Class I railroads, and the AAR and its committees were instrumental in developing policies and systems for managing the equipment fleet and other aspects of operations. It was natural for the AAR to play a lead role and it was possible to find capable people to serve on the various task forces. Fifth, the program was able to build upon prior research supported by the FRA and by the AAR, including work on equipment utilization, labor-management task forces that were trying to improve work rules, and work on freight service reliability.

What is Needed?

In summary, the big question is whether or not the industry will be willing and able to provide good, efficient, safe service for what the public would view as their proper share of the freight market. Will investments in the rail system reflect just the profitability of the railroads – or will they also reflect the public benefits in terms of economic development, energy use, safety and congestion, emergency preparedness, and national security?

Expanding capacity will need investment in facilities, equipment, and control systems. It will also require investments in people and in planning capabilities. To determine how best to allocate funds, it will be highly desirable to have a research and planning effort that is commensurate with the investments that are under consideration. I therefore recommend:

- Any program that provides significant funds for investment in rail should include a small component for planning and research. If billions are to be spent, then it is important to spend those billions effectively.
- Sufficient resources should be made available for policy analysis. Congress, transportation agencies, and the public need a better understanding of the potential role for rail for both freight and passenger transportation under various scenarios regarding energy, the labor force, and technological development. Research and planning efforts could lead to a better understanding of the potential for an “Interstate Rail System”.
- The FRA should support research/demonstration programs involving the Class I railroads, short line and regional railroads, customers, and public agencies. These programs could incorporate many of the features that led to the success of the Freight Car Utilization Program.

Biographical Sketch for Carl D. Martland

Carl D. Martland is a senior research associate in the M.I.T. Department of Civil and Environmental Engineering, where he has been actively engaged in rail freight research since 1971. He earned the BS in Mathematics (1968), the MS in Civil Engineering (1972), and the Civil Engineer Degree (1972), all from M.I.T. A specialist in rail transportation, Mr. Martland has studied service design, costing and control, equipment utilization, maintenance of both track and equipment, terminal capacity and operations, intermodal transportation, productivity, public policy, regulation and technology assessment. He has supervised more than four dozen research projects for the Association of American Railroads, individual railroads, and various state and federal transportation agencies, and he has participated in studies of freight operations in Argentina, Bolivia, Brazil, Canada, Columbia, China, Egypt, India, Panama, Japan, Spain, and Thailand. At MIT, he has supervised more than 50 theses and worked with more than 100 research assistants, many of whom have gone on to work for the rail industry or public transportation agencies. He has submitted testimony in legal or regulatory proceedings in the United States and in Canada concerning the effects of labor agreements on productivity, the potential for modifying car hire and car service rules to improve equipment utilization, the factors affecting terminal and system capacity and performance, and the sources of productivity improvement in the rail industry since 1965.

Mr. Martland has published more than 120 papers and research reports, including papers that earned awards from the Pan American Railway Congress, the Canadian Transportation Research Forum and Transportation Research Forum. In 1991, he was a co-author of the paper that won the Transportation Research Forum's Outstanding Paper Award; in 1989, 1990, 1991, 1993 and 1994 he won the Conrail Award for the Best Paper on Railroads presented to the Transportation Research Forum. In 1997, the Transportation Research Forum selected Mr. Martland as the recipient of the Distinguished Transportation Researcher Award, citing the contributions of his research to improvements in the performance of the rail industry.

Mr. Martland has served as the president of the Transportation Research Forum, the chair of the Rail Applications Special Interest Group of the Institute for Operations Research and Management Science (INFORMS), and a member of various committees of the American Railway Engineering and Maintenance Association and the Transportation Research Board. He has taught courses on Transportation Systems, Project Evaluation, Transportation Demand & Economics, and Freight Transportation Management at M.I.T.